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ABSTRACT

Many people take for granted the use of language as a tool for coping with everyday occupational and social problems. However, there are those, such as prison inmates, who have difficulty using language in this manner. Realizing that prison inmates are not always able to communicate effectively through standard patterns of speech and thus are hampered in their rehabilitation efforts, this project focused on the modification of their substandard speech habits . Subjects were 21 Draper inmates matched on the basis of pre-oral usage test and divided into two control groups and one experimental group. Measures were taken and percentage change scores from pre- to posttreatment were employed as the units for analytical processing. A major finding was that all experimental inmates showed increments that averaged 36 percent while a majority of the control inmates showed slight to moderate decrements averaging 6 percent. In concluding it was noted that the speech intervention drills and discussions were directly effective in modifying oral usage and indirectly effective by way of generalization of training in similar and dissimilar behavioral areas. (Author/JS)

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John M. McKee, Ph.D.
Executive Director

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John M. McKee, Ph.D., Principal Investigator
Sally F. Roy, Research Associate
W. O. Jenkins, Ph.D., Consultant
A. C. Carmen, Research Aide
Lynda A. Hart, Editor

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THE ACQUISITION OF STANDARD ENGLISH SPEECH HABITS USING SECOND-LANGUAGE TECHNIQUES: AN EXPERIMENT IN SPEECH MODIFICATION AND GENERALIZATION IN THE VERBAL BEHAVIOR OF PRISON INMATES

Rehabilitation Research Foundation
Experimental Manpower Laboratory for Corrections
Draper Correctional Center
Elmore, Alabama

February, 1970

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ABSTRACT

Realizing that the inability of prison inmates to communicate effectively through standard patterns of speech often hampers rehabilitative efforts, this project focused on the modification of their substandard speech habits. The specific aims were: (1) to foster the acquisition of more standard English usage, (2) to determine the extent of transfer or generalization of oral skills to other aspects of verbal behavior, (3) to ascertain the influence of oral-usage training on self-concept, and (4) to set the stage for the development of a training unit for a basic education program.

Subjects (Ss) were 21 Draper inmates matched on the basis of a pre-oral usage test into seven sets of three each. Experimental Ss were exposed to the intervention treatment employing second-language techniques in a standard intervention or transfer-of-training design. One control group (Farm Ss) worked on the prison farm while the other control group (School Ss) attended the Manpower Development and Training School.

Intervention consisted of drills and discussions focusing on standard English usage and the employment of language as a tool for coping with everyday occupational and social problems. Pre- and posttreatment measures were taken of oral and written usage, phoneme discrimination, "spontaneous" speech in a movie description yielding an error count, a structured interview involving verbal and nonverbal behavior checklists and ratings of self-concept, and the Tennessee Self Concept Scale. Percentage change scores from pre- to posttreatment were employed as the units for analytical processing.

The results were as follows:

- All experimental Ss showed increments that averaged 36% while a majority of control Ss showed slight to moderate decrements averaging -6%.

- The intervention generated significant transfer to written usage in that all experimental Ss showed gains averaging about 20% while control Ss yielded slight declines averaging about -5%.

- Orderly generalization decrement functions emerged for all experimental Ss. Typically, percentage change scores were highest for oral usage, next for written usage, and least for phoneme discrimination. Control Ss failed to show this systematic decline.

- Experimental Ss showed a greater reduction in "spontaneous" speech errors at a moderately significant level than did control Ss, but the absolute frequency of errors for all Ss was low.

- The Tennessee Self Concept Scale yielded essentially chance findings except for the suggestion of a pattern effect favoring experimental Ss, e.g., "Personality Integration."

- The ratings of self-concept and the verbal behavior checklist outcomes from the structured interview indicated a trend for slightly greater gains in the experimental group than in the control group.

In conclusion, the speech intervention was directly effective in modifying oral usage and indirectly effective by way of generalization of training in similar (written usage and "spontaneous" speech) and dissimilar (self-concept) behavioral areas. Future research along parametric (e.g., duration of intervention) and methodological (e.g., instrument development and refinement) lines is suggested.

INTRODUCTION

Statement of the Problem

A core concept and postulate of behavioral research is that current functioning is conditioned by previous experience. Thus, individuals coming from a culturally deprived background have developed and maintained a variety of habits that are maladaptive in the middle-class society of today. Such groups include inmates of our prison systems.

Among the many dimensions along which cultural deprivation has had its impact is the basic one of language and verbal behavior. Within his deprived environment, the offender has learned ways of verbally communicating which are inappropriate to social behavior in the middle-class setting to which he will return. Therefore, a pressing problem for intervention with the offender is the development of more standard speech habits.

A basic dimension on which language and verbal behavior has great influence is the vaguely defined concept of self-confidence or "self-concept." It is widely assumed that offenders have strong feelings of inadequacy and inferiority and are basically lacking in positive self-confidence or self-concept in dealing with the "outside" or "free-world" standards of society. A plausible assumption in this connection is that verbal behavior is an integral part of the development of a self-concept that allows the individual to operate functionally in his environment, particularly in coping with people. In practice, this means that the offender in the "free world" has as his method of coping with environmental events nonverbal habits that often get him into trouble. For instance,

the offender when in disagreement with another person will often respond with physical violence rather than coping with the situation by verbal means (Miller & Swanson, 1960).

The overall aim of this research project was to develop in the offender verbal and communicative skills of a standard English variety using second-language methods and techniques so that he has available to him a tool to interact with and control his environment, particularly the people in it, without cutting across the grain of the legal system. In other words, the aim was to teach more standard English speech so that the offender has the means of dealing with his environment, particularly in occupational, social and other problem-solving areas.

Specific objectives of the study:

- To give the offender more control of standard English speech habits so that he can cope with his environment and to determine the effectiveness of the teaching procedures. The teaching procedure included discrimination formation on the part of the offender as to when to use newly acquired verbal skills and when not to use them.

- To determine the degree of transfer or generalization of newly acquired oral skills to other aspects of language, such as written usage.

- To determine the influence of the new oral skills on self-concept measured along a variety of dimensions.

- To work toward the development of a training package which could be included in a programmed instruction curriculum that will effectively improve the spoken English of the offender.

Review of the Literature

Until recently there has been very little published research on oral practice for the purpose of developing standard English habits of speech in the culturally deprived including offenders. The fairly

new approach of teaching standard English using second-language techniques has its roots in foreign-language learning, for foreign-language teaching has made successful use during the past few years of oral practice drills to establish very firmly the patterns of the language under study (Fairfax, 1965). Therefore, much of this section reviews the most pertinent published and unpublished literature in this area.

The approach to language study in the 1920's and 1930's was characterized by little interest and even less activity in foreign-language learning. Language teaching was limited to a few well-known languages, and the mode of instruction, characterized as the "grammar-translation" method, had a simplistic approach to language structure with goals more esthetic than practical (Moulton, 1962). However, the publication of Bloomfield's Language (1933) was to have a revolutionary effect upon language teaching in the United States. As a result, descriptive linguistics was to change from an esoteric anthropological discipline, popularized only by Edward Sapir (1921), into a modern scientific approach to language.

The climate of apathy toward foreign languages changed with the advent of World War II. During this period the military became increasingly interested in the exotic as well as the more familiar languages, and J. Milton Cowan actualized an Intensive Language Program for the military which had been originally established by the American Council of Learned Societies (ACLS). In the few short months after Cowan became the first director of the Intensive Language Program in Washington, at least 56 courses in 26 languages involving 18 universities and 200 students were in operation (Moulton, 1962).

Much of the methodology of learning a foreign language without formal material was made available with the publication of Bloomfield's Outline guide for the practical study of foreign languages in 1942. A new type of language teaching test, e.g., Spoken Burmese, Spoken Chinese, etc., also began to appear in the "Spoken Languages Series" under the direction of Henry Lee Smith (1942-1944). These texts were published by the U.S. Department of Defense, and the authors were the most prominent linguists of the 1940's and early 1950's.

Out of these intensive efforts grew a new approach to teaching languages which emphasized grammar based on the actual description of a language rather than the prescriptions of puristic grammarians, and an approach emphasizing the spoken language rather than reading knowledge in and the literature of well-known European and oriental languages. The teaching method included graded materials based on a structural analysis of the language with the structure presented by a trained linguist. The method also included small class drills several hours a day using a native speaker. This method is continued almost intact today by the Department of State's Foreign Service Institute (FSI) in Washington, established in 1946 to teach foreign languages to members of the foreign service.

Following the war, teaching languages was extended from the military to high schools and colleges using this new method. The "Spoken Language Series" was published for the civilian market in some 22 languages. At first the application of the new method was limited to the exotic, or less familiar languages. An enterprising attempt to adapt the wartime methods was made at Cornell University where a grant from the Rockefeller

Foundation helped establish a Division of Modern Languages (Cowan, 1947). The Cornell Plan maintained the essential ingredients of the Intensive Language Program. Agard and Dunkel (1948), and Dunkel (1948) offered civilian adaptation of the new method.

The application of linguistic methods to civilian populations in colleges and universities, however, required the use of professional language teachers as well as linguists, for there simply were not enough of the latter; likewise, there were not enough native speakers to go around. The growth and development of the language laboratory helped in both instances. Linguists could now concentrate on the development of materials, native speakers could be captured on disc or tape, and language teachers could handle the programs. The relationship of these three elements have been discussed and surveyed in three monographs published by the International Journal of American Linguistics, (Oinas, Ed., 1960; Najam, Ed, 1962; and Gravit and Valdman, Eds., 1963).

In the 1950's, the new method, now known as the audio-lingual method, had developed under the impetus of the Foreign Language Program of the Modern Language Association supported for six years by Rockefeller Foundation grants and later by the National Defense Education Act (NDEA) (cf. Parker, 1961). Carroll (1960) suggests four essential characteristics of the audio-lingual method as it is now practiced:

1. The language is presented in the spoken form before it is presented in its written form.

2. Teaching methods rest upon the careful scientific analysis of the contrasts between the learner's language and the "target" language (Lado, 1960).

3. Stress is laid on the use of over-learning of language patterns by a special type of drill known as "pattern practice" (Gravit and Valdman, 1963).

4. There is an insistence on the desirability of learning responses in "real-life" communication situations (Garner and Schutz, 1969).

The application of audio-lingual techniques to the teaching of the English language began immediately after World War II. The impact was not felt in the teaching of English to speakers of English but in the field of teaching English as a foreign language--a field towards which linguists, per se, began to gravitate as foreign-language study once more came under the domination of language teachers. An earlier book by Fries, American English grammar (1940), went practically unnoticed, but a later post-war book, Teaching and learning English as a foreign language (1945), heralded the involvement of linguistics in this field. By 1956, several textbooks began to appear on English structure from a linguistic point of view, notably Whitehall (1956), Lloyd and Wardel (1956), and Roberts (1956).

The literature in the field of English as a second language in the past three decades is quite impressive. Allen (1965) provides teachers with a book of readings on crucial articles primarily from this period. Finnocchiaro (1964) provided a basic guide for teachers. An annotated bibliography was produced by the Center for Applied Linguistics (O'Hanesian and Wineberg, 1966). Another helpful teacher's guide was also produced by Stevick (1957). Gleason's recent book (1965) details the role of linguistics in the analysis of the English language.

It was only quite recently, however, that a very practical use of the audio-lingual method was discovered: that of utilizing oral language techniques in teaching standard English to speakers of non-standard English dialects. Ellen Newman (1968) offers a concise discussion of this approach

and a detailed bibliography of relevant material. The most detailed work has been that of William Stewart who published a series of three articles on Non-standard speech and the teacher of English in 1964. In the same year the U. S. Department of Health, Education and Welfare published a volume entitled Improving English skills of culturally different large cities (1964).

Several papers by Labov and others have investigated problems among Puerto Ricans and Negroes in New York, and offered suggestions for teaching standard English to these urban populations (Labov, Cohen, and Robins, 1965; Labov, 1967; Labov and Cohen, 1967). Of very practical value are tests for primary children to assess the occurrence of selected features of non-standard English (Taft and Tennis, 1968).

Numerous programs, both governmentally and institutionally supported, have been inaugurated for minority groups and the culturally deprived to provide them with an expanded linguistic repertory adequate to deal with American society at large. Among these are elementary language programs in Shadeville Elementary School in Florida's panhandle in which instructors teach English as if it were a foreign language (Braddock, 1969); Speech training for secretaries (Brien and Ory, 1967) concentrates on teaching various communication skills required by secretaries; and, a program to teach standard American English to speakers of nonstandard dialects in the Job Corps developed by the American Institute for Research (Gropper, et al, 1967).

The secretarial training in New Orleans set out to investigate whether there were speech skills that differentiated between the employable and the unemployable in the female Negro who was relegated to

the life of the domestic. The experiment indicated that this was, in fact, the case. Utilizing objective tests, speech clinician ratings, and linguistic analysis, it was discovered that phonological, grammatical, and lexical skills were found to differentiate the employable and unemployable, and that three-quarters of this population had inadequacies in these skills which affected their job opportunities.

Up to this point, this review of relevant literature has been concerned with the development of the science of linguistics, its impact on language learning, the application of this combination in teaching, and its application in teaching foreign languages and English. Several recent developments, however, have begun to bring new insights to the field of language teaching and learning--notably the challenges by Chomsky (1967) of many accepted linguistic and language teaching dogma and by the new interest manifested by psychologists in their investigation of learning as applied to language acquisition Lambert, 1963; Rivers, 1964; Najam and Hodge, Eds. 1966; Staats, 1968).

All these studies are having an impression on language-teaching methodology, as old assumptions are being subjected to theoretical and experimental scrutiny, a scrutiny which has not kept pace with the development of language-teaching methodology and the assumptions on which such methodology rests (Hayes, 1962).

The specific precursors of the present program include the military background development, the New Orleans secretarial project and the Job Corps program. These have been discussed. There are two other programs that are directly pertinent.

Heinberg (1969) at the University of Hawaii developed an experimental program to teach "Universal American Speech" to native Hawaiians who had previously been limited in their communication with other islanders and mainlanders by their pidgin. His materials stress acquisition of Universal American in addition to--not replacement of--the native pidgin. In fact, Heinberg feels his program would be more effective if he could teach "mo' bettah pidgin" simultaneously with standard English.

Hurst (1968) in Washington, D. C., developed a program teaching culturally deprived children and adults to use standard English as a second language. He, like Heinberg, stresses the need for dissemination and utilization of two languages.

As a final overview comment, psychology has dealt with the analysis of language and verbal behavior since its inception in the 1800's. Three programmatic approaches of recent vintage that constitute background material need mention. The publication of Skinner's Verbal behavior in 1949 provided new dimensions to the area of psycholinguistics. Osgood's development of the Semantic Differential (1955) as a general method for verbal analysis provoked wide-scope research. Finally, during the 1950's and continuing to date, there has been voluminous research on conditioning verbal habits dealing with a wide range of parameters associated with traditional learning theory (Jenkins, 1955).

These many trends and developments in education, linguistics, sociology and psychology contributed in varying degrees to the conceptualization and implementation of the present study which deals, in brief, with speech modification and its generalization, in the offender population.

METHOD AND PROCEDURE

Design

A matched subject design was used employing seven sets of three Ss each, involving a total number (N) of 21. Ss were selected and matched quite precisely on scores from oral usage (OU) tests. In addition, all Ss were given preliminary tests on written usage (WU), interviewed, and administered the Tennessee Self Concept Test.

A classical transfer-of-training design was employed in which, after matching, speech intervention procedures were employed with experimental Ss. Farm Ss worked on the farm of the Draper Correctional Center during the period of intervention for the experimental group and were administered no formal training whatever. It was inferred that the comparison of these two groups would yield answers to many questions, but it was also considered that the Hawthorne effect--formal training increases proficiency in a variety of areas both directly and indirectly--might operate in such a program. Therefore, a group of Ss undergoing formal schooling was employed. The individuals in this special control group (School Ss) were trainees in the Manpower Development and Training (MDT) project and received six hours of vocational training and two hours of basic and/or remedial education, including some training in English grammar. This group receiving formal training without direct focus on speech modification--although their grammatical training might show some positive transfer--would control for the effects of participation in formal educational-type intervention.

The effects of the intervention training on verbal behavior were tested in a posttest situation both directly and indirectly. The direct tests consisted of assessments by way of OU, the area in which training occurred. The indirect method consisted of two forms of potential transfer opportunity,

namely, WU and Phonome Discrimination (PD). The Tennessee Self Concept Scale, (TSCS) an even more indirect transfer possibility, was also employed. Providing the offender with a tool that could serve him both occupationally and socially might enhance his self-concept, this area being a basic problem in the offender population. In addition, measures of change included pre- and posttest interviews conducted by individuals not directly concerned with the project so that the generalized effects of speech change could be assessed in this area.

The intervention procedure employed techniques for teaching more standard English usage in the oral sphere as a second language. Teaching was done in drills and "seminars" or discussions in which various topics, including such items as the functional role of language in society, were treated.

This type of transfer-of-training or attitude change design calls for an analysis of covariance treatment of data. For the purpose of this experiment, a convenient shortcut substitute analysis of covariance was used that consisted of converting change scores from pre- to posttest to percentages of the original pretest level of proficiency at the outset of the experiment and comparing and contrasting the three groups on the percentage change performances for the several different measures involved. It might be noted in passing that the percentage conversion technique was not a necessary step because of the rather precise matching. Ss could have been directly compared on posttest performance alone, but in order to wash out or at least minimize the role of individual differences in contributing to variability, a percentage conversion procedure was employed in most major instances.

The basic ingredients of the design are shown in the following representation.

Speech Modification Project: Basic Research Design

Condition	Pretest*	Intervention	Posttest*
Experimental Ss	Yes	Speech training	Yes
Farm Ss	Yes	Worked on farm	Yes
School Ss	Yes	Attended MDT school	Yes

*Pre- and posttests: Oral Usage
Written Usage
Phoneme Discrimination
Movie Description
Structured Interview
Behavior Checklists
Tennessee Self Concept
Ratings of Self-concepts
Screening: Gray Oral Reading

Subject Selection and Sample Characteristics

Draper Correctional Center has a population of approximately 800 men. Of this number, 104 were tested for the investigation. Criteria for selection were established as performance at or beyond the fifth-grade level on the Gray Oral Reading Test, minimal standard English speech as measured by the OU Test, and prison sentences which would assure Ss' remaining in the institution for the duration of the experiment and the follow-up study.

Brief conversations were held with the 104 men to determine the quality of their spontaneous speech. Obviously, it was desirable to exclude from the experiment those whose speech was impeccable and those whose pronuciation and articulation habits were so poor that they could not be changed in the brief period of time available. Also excluded were those who exhibited marked deviances such as significant speech and hearing difficulties.

Since time did not permit testing all of the potential Ss using the Gray Oral Reading Test, a short paragraph was given to each to determine whether their reading ability would warrant further screening. Those who could were then administered the Gray Oral Reading Test to meet the criterion for reading that had been set at the fifth-grade level. Following this instrument, the OU Test and WU Test, both specifically constructed for the the experiment, were administered. From the results of these measures, the final sample of 21 experimental and control Ss was obtained and matched. (Copies of the OU and WU instruments may be found in Appendix C.)

Ss were all males; age range, 18-32 years (mean, 22.5 years); mean time in prison at the time of pretesting, 1 year, with a range from 2 months to 13 years; reported educational level of 6.5 years, with a range of 5 to 12 years; and characterized by offenses ranging from second-degree murder to minor burglary.

Pre-intervention Assessment and Matching

In all, six measuring instruments were employed before and after intervention.

Oral English Usage Test (OU). The OU Test was used to match Ss for assignment to one of the three conditions of the experiment and to measure the direct effects of intervention. This was a "homemade" instrument consisting of 50 sentences, some with grammatical errors and some correct. S's task was to identify errors and correct them. For instance, S would hear the sentence: "Mother is going to the beach with Steven and I." He had to recognize the error and correct the sentence: "Mother is going to the beach with Steven and me." The sessions were taped and graded. Ss were matched into sets of three on the basis of number and type of errors. The latter consisted of tense, subject-verb agreement, pronoun usage, double netatives, adverb-adjective usage, and demonstrative usage.

Written English Usage Test (WU). This measure was also developed for the experiment. It consisted of 30 sentences, some correct and some incorrect. Ss made their corrections in writing. The sentences were different from those of the OU Test but the same types of errors were scored. This index was used to study any transfer effects from oral to written usage.

Phoneme Discrimination (PD). Here Ss were required to listen to taped pairs of words, such as "here" and "hair," and use them in sentences. This measure constituted a more remote point on the dissimilarity continuum farther from the OU and WU indices. (A copy of this instrument may be found in Appendix C.)

Movie Description. To obtain a sample of spontaneous speech, Ss were requested to watch a movie on TV and to relate the story the next day. These reports were taped, and from the transcripts of the descriptions, it was possible to accomplish a work count for fluency and a count of the types of errors involved, e.g., errors in tense, subject-verb agreement, incorrect negative constructions, pronoun case, incorrect interchange of adverbs and adjectives, or substitution of demonstratives for pronouns. An S who was reluctant to talk or who gave too brief a description was instructed by E to "tell about something else." The error count from "spontaneous speech samples" was used later to aid in the construction of drills to correct S's particular errors.

Structured Interview. This interview was a "stress situation" for S because he did not know E, and in most cases E was a woman. It was intended to give a fairly complete picture of S's environmental interactions and to obtain a measure of his self-concept--what he thought of himself and how he thought others viewed him.

During and after the structured interview, E completed behavioral checklists which attempted to assess a number of dimensions of verbal and nonverbal

behavioral characteristics of S. The verbal behavior checklist consisted of six items: latency, amount, rate, loudness, pitch, and changes in loudness and pitch. Each of these items was assessed on a three-point scale: one point indicating optimal (desired) behavior and the other two points indicating deviation from the optimal in either available direction.

The nonverbal behavior checklist consisted of seven items: frequency of physiological behavior (sweating, blushing, and fast breathing), trembling and shaking, posture, body movements, looking at and responsing to E, changes in facial expressions, and any special behaviors, such as nail-biting, taping fingers, etc.

The purpose of these checklists was to obtain behaviors associated with learning to speak more standard English and thereby to measure a generalized effect of the intervention. The structured interview was administered to the experimental and farm groups but not to the school group.

In addition, a rating scale was devised for assessing S's overall self-concept based on oral information provided by him during the structured interview. The rating scale for assessment of self-concept consisted of simply one item requiring independent raters who were not involved in the project to rate the S's concept of "what he thinks of himself" on a four-point scale ranging from a high estimate to medium high to low to very low self-concept. Again, the purpose was to obtain a generalized indirect effect of the speech intervention in training on S's self-assessment and to determine whether or not it changed as a function of the treatment.

Tennessee Self Concept Scale (TSCS). The TSCS was administered before and after intervention treatment. In terms of scoring, it reduces to 29 variables or dimensions of measurements along which the individual rates himself. The purpose of including this instrument was to obtain a generalized index of changes in self-concept as a function of learning more standard spoken English.

Direct and Generalized Post-intervention Measurement

The same six basic instruments were employed in assessing behavioral changes after intervention for the experimental groups and for variations in the two control groups. In the cases of the oral and written indices a parallel form of the original instrument was developed and use. However, in the case of the other instruments, exactly the same procedures were used in the posttest as were used in the pretest. By this procedure the stage was set for the employment of percentage-change scores as the units of measurement from pre- to posttest.

Description of Intervention

Drills. The intervention consisted of two major procedures--taped drills and group discussion seminars. The drills were constructed to treat the areas of OU found in the pretreatment measurement to be most frequently in error and were presented to Ss on dual-track tape recorders through individual headsets. These drills followed the sentence-pattern-practice procedure in which S first heard the sentences and repeated them. After the repetition drills, there were substitution, transformation, and correction drills. In a transformation-type drill, for example, S might hear, "I am a good welder." According to the directions on the tape, he would respond with, "We are good welders," or, "They are good welders." The master voice on the tape would either confirm or reject his response and he would then have the opportunity to correct or repeat the proper response. The correction drills were the last step in the process of discrimination formation; in these drills S had to decide between the correct and the incorrect response and was provided immediate feedback.

The drills lasted approximately five minutes. Upon finishing a drill, S rewound his machine and listened to the replay of his drill. Although the drills were monitored by E, many times S decided he had not mastered

the drill and would go back through it. Student record sheets facilitated this "self-pacing" objective.

These drills were "homemade," constructed for the individual S's needs and recorded by nonprofessional voices. Occasionally Ss themselves were the model voices. The idea was to record a native Southerner rather than the professional announcer--someone with whom they could identify and feel comfortable. Allowing Ss to assume the model-voice role are an added incentive.

Twenty drill sessions in all were held. Other than E's monitoring the sessions, no other formal assessment test was given during the drill practices. Copies of the drill materials are available through the Rehabilitation Research Foundation.

Group discussions. A one-hour group discussion was held every day for the duration of the experiment, five days a week for a total of 20 sessions. The purposes of these discussions were (1) to reinforce drill learning by providing conversational opportunities that permitted different stimulus situations for generalization and transfer, such as role playing for job interviews, meeting strangers, etc.; (2) to provide explanation and rules that would be necessary to supplement the drills to cover areas of English usage that could not be treated in drill work, such as misuse of words (learn for teach) etc.; (3) to provide situations that enabled S to establish relationships with people other than Es and other Ss; (4) to provide sensitivity training as Ss learned to recognize errors in others as well as in themselves and also to correct these errors while S was learning to accept criticism from other Ss; (5) to provide Es with opportunities to observe and record behavioral changes, both verbal and nonverbal; and (6) to increase motivation through social reinforcement by other Ss and by Es.

The orientation period was originally planned to last only one day. As the experiment began, however, it appeared that Ss unacquainted with other Ss or the Es were reluctant at first to interact and particularly to

criticize each other. As the experiment progressed--especially after the first time an S caught E making an oral error--the sessions became more relaxed and Ss were able to "open up" to the comments and criticisms of others. The orientation period, originally scheduled to last one day, lasted a week. It was decided then to extend the experiment an additional week to allow for the four weeks of drill work called for in the design. Thus, a total of five weeks was involved.

All groups discussions were taped and played back to Ss for further discussion. The content of the group discussion was varied and was introduced by both E and S. The content ranged from discussion of problem solving and how language is a valuable "problem-solving tool" to the most amusing or embarrassing moments of their lives, to the length of E's hair and mini skirts.

Since Ss were sometimes uncomfortable at first, providing them with topics to speak on was definitely a problem. (As a matter of fact, one S early in the experiment named the study "Spoken Anguish" because it was so difficult for them to talk.) One day, when they all had a topic and no one would volunteer to speak, one S stood up and spun an empty "Coke" bottle on the table. The S pointed at was the first to speak. When he finished his speech or discussion, he spun the bottle to another S.

Video-tape recording was used once at the beginning of each week, and Ss could see and hear themselves on the playback. Ss responded favorably to these situations: they were willing to talk in role-playing situations in front of the video tape.

Data Processing and Analysis

The nature of research design prescribed the analysis of covariance for treatment of the data, since there were pre- and postmeasurements in which variations across groups and within Ss might emerge. However,

the necessity for analysis of covariance was precluded when two factors were considered, namely, the fact that Ss were matched across groups into sets of three rather carefully on the OU Test performance, and the fact that the unit for analysis treatment was percentage change scores. In most cases, major analysis percentage change scores were employed, but in a few instances there was such a small magnitude of numbers involved, straight difference scores from pre- to posttest were obtained S by S and treated with the analytical procedure.

The methods for analytical treatment of the data were of two varieties: (1) overall analysis based on the analysis of variance to determine the contribution of experimental conditions, nature of tests and their interactions, and (2) percentage change scores from pre- to posttest were subjected to a variety of newly developed statistical analyses to determine the significance of differences across sets of Ss involved in the three conditions of this experiment. One of the primary statistical procedures that was employed consisted of the phi coefficient which was applied by obtaining a grand mean or median of percentage change scores for all Ss involved for a given comparison and then sorting the numbers of conditions according to their magnitude as above or below this overall average value. The phi coefficient yields a correlation figure which tells the extent of covariation between the experimental treatment on the one hand and the behavioral change associated with it on the other. In addition to the phi for multiple comparisons, the t-test of a rank or a classical variety was used to make subcomparison in a number of instances.

Next, a derivative of the classical analyses of variance based on the range was employed. This statistical procedure has been discussed in detail in a report by Jenkins (1967). It consists of estimating the between groups variance or the effects of the experimental treatment by the range across the means of the sample weighted by the number of cases in each of the subsamples of the conditions of the experiment. (The latter, of course, would

be seven in the current experiment.) This estimate of between group variance is then related in ratio form to an estimate of error, subject, or within group variance by computing the average range across the several experimental and control conditions. In other words, the steps in this procedure are to take the difference between the largest and smallest means and multiply this difference by the number of cases in the subsamples. The resulting F-range value is referred to a special analysis of variance table constructed for this purpose.

In the course of this investigation a new index of significance of difference in behavior was developed. It is known as the Jenkins' Index of Covariation (JIC) and is related to curvilinear correlation or the so-called correlation ratio in that it is based on a ratio between an estimate of the variance across means divided by an estimate of the variation across Ss. In this sense, it is, of course, directly related to the classical analysis of variance procedure. The JIC is based on the range across the group averages divided by the range across Ss' performance. Either the mean or the median is employed as the average. In other words, the computations involved calculating the largest average value and the smallest average value and taking the difference between these and dividing it by the difference between the largest and smallest S scores in all sample distributions. The resulting number is a correlation figure and is interpreted as such. It indicates the extent to which the experimental treatment has "taken hold" of behavior to generate differences across groups relative to the extent to which Ss vary one from the other. (A technical note concerning this procedure is contained in Appendix B.)

RESULTS

The Three Basic Speech Indices: Oral Usage (OU), Written Usage (WU), and Phoneme Discrimination (PD)

Table 1 presents distribution and analytical statistics for the three experimental conditions and for the three separate measures. From a quick inspection of Table 1, it is immediately apparent that experimental Ss in OU are appreciably higher than those for either the Farm or School Ss. This differential is reflected in an F-range value of 9.2 at the bottom of the OU column of Table 1. Associated with that is a correlation figure, the Jenkins Index of Covariation (JIC = .63), which indicates a large degree of covariation between the treatment procedure and the behavioral changes associated with conditions. (The individual data appear in Appendix A Table A.)

Inspection of the WU column suggests a similar trend on a somewhat reduced scale, both in terms of the magnitude of the numbers and the level of significance achieved. Again, the experimental group shows an average percent gain score of over 20% as contrasted with the slightly negative losses associated with the Farm or School groups. The trend, however, is only moderately significant.

The pattern in PD is somewhat different, with greatest gains for Farm Ss followed closely by experimental Ss, and School Ss' showing negative change scores. The moderate significance of the associated F-value and the JIC at the bottom of that column is attributable to the close correspondence of the experimental and farm groups and the divergence of the school group. Differences are only moderately significant with a p-value of .07 and a JIC of .40. These comments obviously pertain to

TABLE 1

Distribution and Analytical Statistics for Percentage Change Scores from Pre- to Posttest for the Three Speech Modification Conditions and the Three Basic Measures

Condition	Oral usage	Written usage	Phoneme discrimination	F-range	P-value	JIC
Experimental						
Mean	36.8	22.7	7.9			
Median	35.7	18.2	7.2	5.7	$<.01$	.48
Range	38.5	53.8	14.9			
Farm control						
Mean	-1.1	-1.9	9.4			
Median	0.0	-13.3	11.8	2.3	.25	-.19
Range	28.9	40.6	15.8			
School control						
Mean	-12.7	-7.7	-5.9			
Meadian	-18.2	-4.5	-8.5	1.1	.35	.11
Range	52.2	57.1	38.0			
F-range	9.2	3.7	4.2	10.0		
P-value	.001	.11	.07			$<.001$
JIC	.63	.30	.40			.52

differences associated with E treatment or the condition to which Ss were subjected so that the PD difference carries little weight.

Looking at Table 1 from the standpoint of the effects of generalization, quite orderly effects emerge for the treated group. Looking accross the experimental group's performance from OU to WU to PD, it is immediately apparent that a smooth declining function emerges. This function appeared in five out of seven of the Ss and the two reversals showed only a slightly higher performance in written usage than oral, so that OU and WU were higher than phoneme performance in all seven experimental Ss. This finding points up a quite rare event: consistently declining generalization functions for individual Ss.

At the right-hand side of that particular row is seen a significant F-range value and also a significant JIC figure of .48. These latter findings indicate significance associated with generalization or maximal transfer of training to OU, next to WU and little (though positive) transfer to PD.

Next, considering the Farm Ss with which no speech intervention was involved, it is obvious that, if anything, they show a reverse generalization function with OU and WU showing slight losses from pre- to posttest and PD showing slight to moderate positive gains. These differences, however, fail to reach acceptable levels of statistical significance. It will be noted the JIC is a negative value indicating a higher level of performance in the PD rather than the OU or WU test.

Finally, for the School Ss, the performance shows a low point for OU and something of an orderly increase to WU and PD although the values stay negative throughout. Again, the outcomes are insignificant.

It should be indicated that the experimental group that had the intervention training was the only group in which generalization was to be expected, and it is strikingly demonstrated in this group. Presumably, the local fluctuations from task to task in the two control groups constitute chance variations around most probably a zero value or no change.

Figure 1 represents median percentage change scores in graphical form. The orderly decline of the intervention group is readily apparent here as are the variable trends in the two control groups.

In absolute terms the trends and differences of Table 1 and Figure 1 are substantial but not overwhelmingly large, but the high degree of consistency exhibited by individual Ss enhances the probability of a systematic effect of experimental condition and generalized task. (The individual data are contained in Appendix A.)

The traditional analysis of variance appropriate to this factorial design was applied. Treatment condition yielded a highly significant outcome (F_2, 18 = 27.0; p = $<$.001), but presumably because of the great S variability involved, the testing task variable was only moderately significant. The interaction, however, despite the gross variance, was significant (F_4, 36 = 3.4; p = $<$.019). This finding reflects the fact of a smoothly declining function for the experimental group as contrasted with variable performance of the two control groups. Conversion of the percentage change scores to ranks to minimize heterogeneity of variance yielded similar ANOVA (analysis of variance) trends.

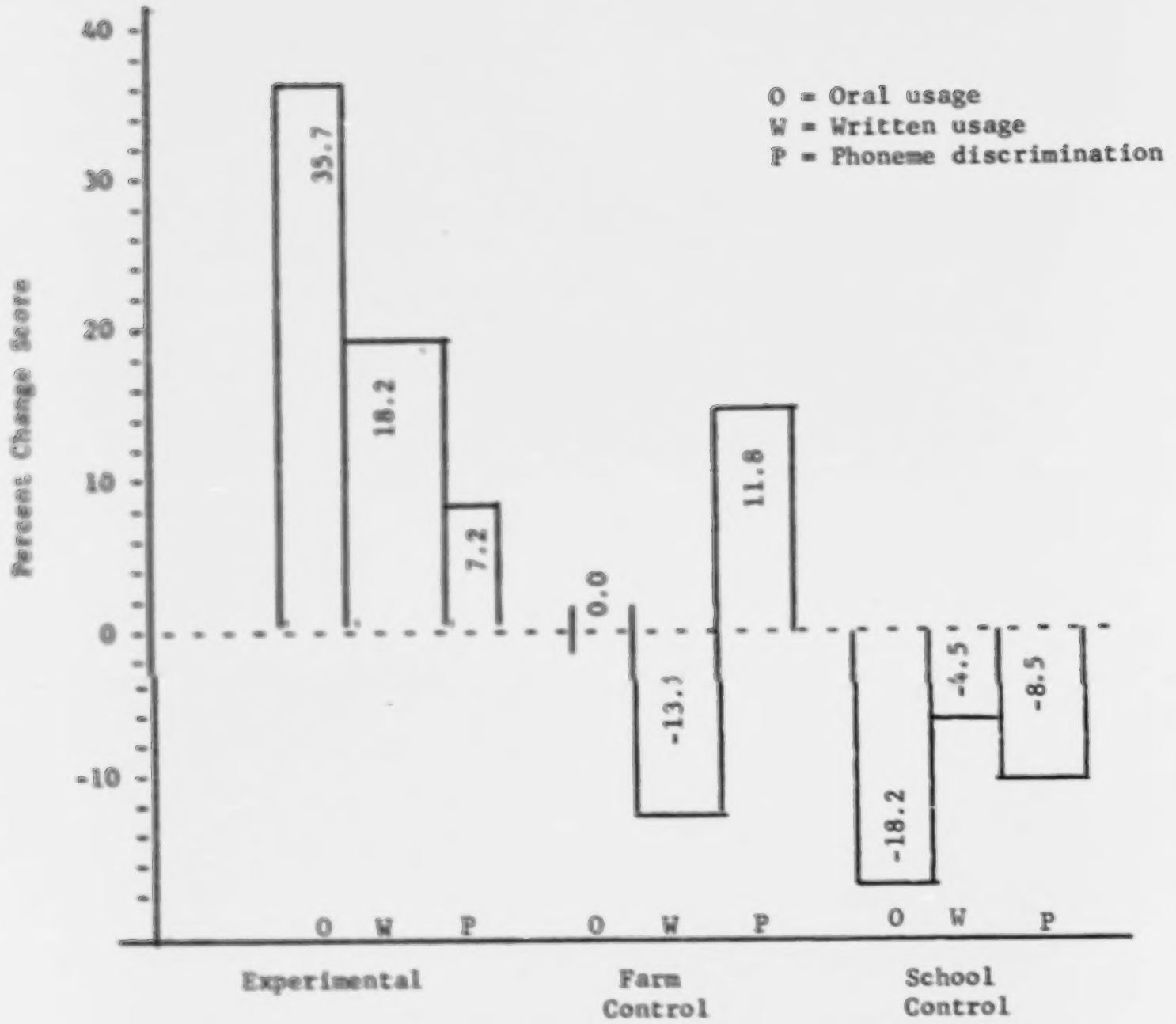

Fig. 1. Median percentage change score for each of the three experimental conditions and the three tasks

Employing Duncan's new multiple range test for sub-comparisons after ANOVA to determine what is contributing to the overall significance, it was found that the experimental group differed significantly across tasks and that the experimental group outcomes differed significantly from those of the two control groups in OU and WU. The differences in PD were not significant between the experimental group and the farm group.

As an overview, it is quite apparent that the intervention treatment had a marked and significant influence. This impact yielded a strikingly consistent generalization decrement functions on an individual S basis in the treated group.

Analyses of Sub-measures for the Tasks

Table 2 presents the mean percentage change scores from pre- to posttest separately for the three different conditions of treatment by the sub-measures employed in the OU and WU tasks. These sub-tests were as follows: tense, subject-verb agreement, pronouns, double negatives, adverbs, and demonstratives. (The latter were not used because the frequency of occurrence was essentially zero in most instances.) (The S data are presented in Appendix A.)

TABLE 2

Mean Percentage Change Scores from Pre- to Posttest for the Three Experimental Conditions by Sub-measures in Oral Usage and Written Usage

Oral Usage

Sub-measure	Experi-mental	Farm control	School control	JIC	p
Tense	62.7	12.7	6.3	.36	.04
Subject-verb agreement	52.9	10.5	-11.1	.32	.12
Pronoun usage	16.0	-36.3	-11.5	.24	.17
Double negatives	86.4	14.8	-44.0	.48	<.01
Adverb usage	54.5	-36.4	-50.0	.40	.03
All measures combined	54.8	0.0	-14.3	.60	<.001

Written Usage

Tense	30.8	0.0	0.0	.12	.45
Subject-verb agreement	21.1	-20.7	-6.1	.19	.22
Pronoun usage	63.6	-6.2	0.0	.37	.11
Double negatives	83.3	-33.3	10.5	.30	.13
Adverb usage	30.0	15.4	7.7	.30	.13
All measures combined	44.8	-8.1	-9.0	.34	.05

There are clear-cut trends in Table 2 that warrant comment. First of all, in OU the experimental group shows the highest percentage gain scores in every sub-measure over both of the two control groups. For instance, in pronoun usage which tended to show the smallest gains, the percentage change score for the experimental group was 16% as contrasted with the -36.3% and -11.5% for the two control groups. At the bottom of the table can be seen the overall figures for all measures combined, with the experimental Ss showing an average gain of about 55%, as contrasted with zero for Farm Ss and a -14% for School Ss.

From Table 2, it can be seen that in OU the three sub-measures of tense, double negatives, and adverbs yielded significance, as did the overall measure; and that the other two indices were not too far off the significance mark. All trends indicated a superior performance for the experimental group in all sub-tests over both control groups. It might be noted that the incidence of behavior was high for tenses, double negatives, and adverbs and relatively low for the other indices.

Considering WU next, the same trends emerge in the lower portion of Table 2, with experimental Ss showing the highest level of performance in terms of gain scores and Farm Ss showing mostly negative or zero values, while School Ss show near zero values in most instances. The overall figures show near 45% gain for the experimental group and losses of close to 10% for both control groups.

In comparing the two portions of Table 2, it is apparent that the percentage gain scores are higher in all but one instance in OU than in

WU for the experimental group. The reversal is in pronouns which had a low frequency of error occurrence. It should be noted that no single index yielded high significance in the treated group. Some moderate significance, however, was achieved in the overall measure which combines the five sub-measures in comparing OU and WU. There were neither consistent nor significant differences for the OU-WU comparison in the two control groups.

Table 3 contains statistical comparisons of OU and WU by sub-tests for the three experimental conditions. The highly consistent decline in percentage change score from OU to WU shows up for the experimental group, particularly in tense usage and, to a lesser degree, in all other sub-measures except pronoun usage. From another viewpoint, the high internal consistency of the data for the experimental group is again demonstrated. The data for the two control groups are variable and inconsistent across sub-measures.

An overall ANOVA was applied to the sub-test data. Because of the appreciable dispersion of scores and low frequency of error occurrence in some categories, the percentage figures were transformed to ranks for this analysis. No single source of variation was highly significant, but the sub-measures, the experimental condition and their interaction approached usually accepted significance levels. (See Appendix A for this analysis.)

In brief, it is clear that the sub-measure data are highly consistent with the overall trends in indicating a higher level of performance for OU as contrasted with WU. Generalization occurs as indicated by appreciable gains in written performance on sub-measures. And, finally, all sub-measures except pronoun usage appear to discriminate systematically between experimental and control performances.

TABLE 3

Measures of Covariation (JIC) and Probabilities in Comparing Oral vs. Written Usage Separately for the Three Conditions by Sub-measures

Sub-measure	Experimental		Farm control		School control	
	JIC	p	JIC	p	JIC	p
Tense	.59	<.001	.20	.11	.05	.40
Subject-verb agreement	.18	.15	+.30	.04	.00	.50
Pronoun usage	-.08	.30	-.25	.07	-.10	.27
Double negatives	.26	.06	+.22	.09	-.24	.08
Adverb usage	.17	.16	-.30	.04	-.20	.11
All measures combined	.42	.005	.10	.27	-.11	.26

"Spontaneous" Speech: Movie Description

In this area of measurement, Ss were briefed the day before their interviews that they would give a description of a movie they had seen on television recently. This procedure was applied before and after training for experimental Ss and after an equivalent time for Farm and School Ss. The units of measurements consist of percentage errors in speech (tense, adverbs, etc.) made in the pretest and posttest, and a difference score between these percentage errors was derived S by S. The individual data are presented in the appendix and Table 4 contains summary statistics.

The most striking feature of these data is the relatively low incidence of error relative to the number of words produced. Most individuals produced at least 500 to 1,000 words in their movie discriptions, but very few individuals produced more than a couple percent of errors. Despite this characteristic, the data are valid as far as they go. A further complication arises in these data in that School Ss were posttested by a different E using a different approach to extract information. The fact that the data for School Ss on the posttest are different from the other two groups of the posttest suggests either a training effect of the school, an E effect, or a confounded interaction effect. Be that as it may, comparisons were made separately between the experimental and the two control groups.

It can be seen from Table 4 that the experimental Ss showed consistent gains, while Farm Ss yielded primarily losses from pre- to posttest, and School Ss showed moderate gains. The latter distribution statistics are distorted by the fact that two Ss showed the largest increments or gains; this event made this group behaviorally different from the other two. In any case the gain of the School Ss was insignificant.

TABLE 4

"Spontaneous" Speech (Movie Description): Percentage Change in Errors from Pre- to Posttest by Experimental Condition

Statistic	Experi-mental	Farm	School	Farm and school combined
Mean	.55	-.76	.49	-.14
Median	.46	-.47	1.70	-.27
Range	2.11	4.08	5.32	5.95
T	1.73	-1.80	0.70	0.29
P	.065	.06	.26	.39
Number gaining	5	1	4	5

Comparison	t-value	P-value	Phi coefficient
E vs. farm control	2.2	.035	.58
E vs. school control	0.1	.48	-.14
E vs. farm and school Cs combined	2.1	.037	.32

The bottom portion of Table 4 shows the separate comparisons for each of the sub-groups, that is, experimental Ss vs. Farm Ss and the experimental Ss vs. School Ss. In these comparisons, there is a significant difference favoring the experimental Ss over Farm Ss, but a near zero trend for experimental Ss vs. School Ss. For this reason, the data for the school and farm groups were averaged by matched pairs and compared with those of the experimental group. Essentially, the same level of significance emerges in this comparison as in experimental Ss vs. the "pure" Farm Ss.

These data, consistent with the findings in the OU and WU tests, indicate a small scale consistent effect of intervention training on a generalized response, namely, "spontaneous" speech. In detail, five experimental Ss showed appreciable gains in this measure from pre- to posttest, and the remaining two yielded only slight losses. On the contrary, six of the seven Farm Ss and three of the seven School Ss showed a greater number of speaking errors on the posttest over the pretest. The difference between experimental Ss and control Ss reaches an acceptable level of statistical significance in this regard.

The significant feature of these outcomes lies in their indicating another dimension of generalization. Again, training effects transferred consistently to "spontaneous" speech.

The Tennessee Self Concept Scale

The Tennessee Self Concept Scale was administered prior to the experiment to experimental and Farm Ss, and also given again immediately after the completion of the experiment. It will be recalled that one initial

hypothesis was that providing offenders with greater language skills would give them a tool with which they could cope with their environment so that they could, for example, use verbal aggression rather than physical. An extension of this point which can be entertained as a hypothesis is that their "feelings of inadequacy" might be diminished and thereby their self-concept might be enhanced. It is obvious that a measuring device needs to be developed, particular to the offender population that focuses on behavioral manifestations of low self-concept as a baseline against which to measure intervention effects. Since such an instrument was not immediately at hand, the Tennessee Self Concept Scale was employed as a first approximation. School Ss, those individuals participating in the MDT program, had already been given the TSCS in the course of their qualification for training, and it was also given at the end of training. It seemed inappropriate to give the scale four times so that the results on the TSCS are not available until the completion of MDT training for School Ss. Analysis was applied to the data of experimental and Farm Ss.

The procedure for data processing was as follows: The standard "T" score for each individual on his pretest was subtracted from his "T" score on the posttest for each one of the 29 variables of the TSCS. These difference scores represent changes on the several variables of the scale and can be obviously either positive or negative in sign. Next, the median of each of the experimental and control change score distributions for each variable was computed, and the means of the medians obtained as a cut-off score on the basis of which change scores were sorted separately into high and low on the one hand and experimental and control on the other. From the

TABLE 5

Phi Coefficients Based on Change Scores Comparing Experimental Ss with Farm Controls for the Tennessee Self Concept Scale. N is 7 for each group.

Tennessee Self Concept Scale Variable	Phi
1. Self Criticism	.10
2. True - False rato	-.10
3. Net Conflict	-.43
4. Total Conflict	.29
5. Total Positive	.56
6. Positive - Identity	.29
7. Positive - Self Satisfaction	.56
8. Positive - Behavior	.10
9. Positive - Physical Self	.29
10. Positive - Moral - Ethical Self	.56
11. Positive - Personal Self	-.29
12. Positive - Family Self	.29
13. Positive - Social Self	.00
14. Total Variability	-.29
15. Column Total Variability	-.10
16. Raw Total Variability	-.29
17. Distribution Score	-.10
18. Number of 5's	-.43
19. Number of 4's	-.29
20. Number of 3's	.29
21. Number of 2's	-.43
22. Number of 1's	-.45
23. Defensive Positive	0
24. General Maladjustment	-.29
25. Psychosis	.10
26. Personality Disorder	-.56
27. Neurosis	.45
28. Personality Integration	.8
29. # Deviant Signs	.43

TABLE 6

Distribution Statistics of Phi Coefficients Comparing Experimental Ss and Farm Controls on Twenty-nine Measures of the Tennessee Self Concept Scale. (The lower half of the table shows the most significant variables.)

Mean	.03	No. postive phi	13
Median	.00	No. negative phi	14
Range	-.57 to .87	No. zero phi	2

Variable No.	Phi	Variable label
28	.87	Personality integration
5	.56	Total positive
7	.56	Positive-self-satisfaction
10	.56	Positive-moral-ethical self
26	-.56	Personality disorder
22	-.45	Distribution score (#1s)
3	-.43	Net conflict
18	-.43	Distribution score (#5s)
21	-.43	Distribution score (#2s)
27	.45	Neurosis
29	.43	No. of deviant signs

resulting two-by-two tables, phi coefficients were computed, representing the extent of covariation between treatment and change. The phi coefficients for all 29 variables for the TSCS are contained in Table 5. The correlational data are summarized in Table 6.

The most striking feature of these data is the large amount of variability characteristic of them. The range in correlations, for instance, is from +.87 to -.36. As a pure statistical manipulation, these data were counted as to the number of positive, negative, and zero correlations involved. The outcome was 13 positive correlations, 14 negative, and 2 zero, with a mean of the total distribution of correlations of .03 and a median of .00. These overall data can be interpreted no other way than such extremely close agreement with chance as to be highly improbable in their own right. In other words, change scores from pre- and posttest on the TSCS did not discriminate between the experimental and control groups.

It does not follow from the chance distribution of correlations that patterning is not operating to indicate differentials in experimental and control change scores in TSCS performance. The 11 highest correlations were inspected, and in most instances, the direction of change indicated by these correlations substantiates a very tentative hypothesis that self-concept showed a slight increment in the experimental group over the control groups. Such a tentative conclusion must be taken with extreme caution in the light of the overall chance distribution of correlations along the positive-negative dimension. The lower portion of Table 6 contains the variable number and label along with the phi coefficient obtained. It is noteworthy that the highest positive correlation is for Personality Integration. It shows that the experimental Ss gained much more in this

factor than did control Ss. The next three correlations are also positive and make "good" behavioral sense in that the experimental Ss show greater increment in Total Positive reaction and certain specific positive reactions such as Self-satisfaction and Moral-Ethical Self.

The three negative correlations that follow also indicate gains in self-concept for treated Ss in that Farm Ss showed a greater gain in Personality Disorder, Extreme Scores, and Net Conflict. The only items contained in Table 6 that are inconsistent with this interpretation of experimental Ss' gaining more in self-concept than control Ss are possibly the last two items, 27 and 29, Neuroses and Number of Deviant Signs respectively. These show positive signs indicating greater gains for treated Ss than for Farm Ss.

Verbal and Nonverbal Behavior Checklists

In the course of the structured interview that was conducted both pre- and posttreatment with the three groups involved in this experiment, Verbal and Nonverbal Behavior Checklists were executed for each experimental and Farm S. The checklists consisted of common items of behavior characterizing the verbal and the nonverbal spheres. The items of both scales were scored so that a high score indicated more appropriate verbal and nonverbal behavior. (A copy of the checklists appears in Appendix C.)

The information contained in and covered by these checklists, while rough, constitutes another potential dimension of generalization of behavior. That is to say, if the intervention program for experimental Ss operated, among other things, to teach the S to relax and talk freely in the presence of another person, such behavior might well generalize and show up on the posttest interview for treated Ss, as contrasted with

the fewer such behaviors on the part of the control Ss. Obviously, in future research in behavioral modification and intervention, it will be necessary to further refine such measuring instruments.

The summary data from both the verbal and nonverbal checklists are contained in Table 7 which contains difference scores from pre- to posttest for both behavioral areas in both groups. Inspection of Table 7 indicates a slightly greater gain in verbal behavior, amounting to a little over 5% in the experimental group as contrasted with a slight loss for the control group. It should be indicated that while the data are in the direction expected on a generalization basis, nevertheless, differences are small and the analytical test did not yield a high level of significance.

On the contrary in the nonverbal portion of Table 7, there is indication that experimental Ss lost slightly, while one control group, Farm Ss, showed on the average no change. Again, these differences are slight and quite insignificant although it is noteworthy that experimental Ss showed their gains in verbal behavior where such gains might be expected as a result of the intervention in their English usage.

It is not an unwarranted conclusion that these data constitute a preliminary suggestion that verbal characteristics of the individual change and generalize to a wide variety of closely and remotely related situations. It should be noted in this connection that the primary posttest for the structured interview on which these checklists are based was a person who did not participate in the experiment and, therefore, was relatively unknown and unfamiliar to Ss. In any event, the findings withthe verbal checklist are consistent with data based on the other measures

TABLE 7

Distribution and Analytical Statistics of Change Scores for Verbal and Nonverbal Behavior Checklists Based on a Structured Interview of Experimental Ss and Farm Controls

	Verbal behavior		Nonverbal behavior	
Statistic	Experimental	Farm control	Experimental	Farm control
N	7	7	7	7
Mean	0.7	-0.6	-0.9	0.0
Meadian	0.0	0.0	-2.0	0.0
Range	-2 to 4	-2 to 1	-6 to t	-1 to 1
No. gaining	4	2	3	3
t	2.0		-0.7	
p	.046		.26	
Phi	.31		-.10	

Ratings of Self-concept

A four-point rating scale was developed for assessing overall self-concept. Since outcomes with both the complex Tennessee Self Concept Scale and the relatively straightforward Verbal and Nonverbal Behavior Checklists had suggested some indication for positive change in experimental Ss over the control Ss, it was decided to apply this rating scale to the reports contained in the structured interviews. Since Es involved in these interviews did not always probe as deeply as possible, the available information was incomplete, but the rating scale was employed as an exploratory measure.

The procedure involved two judges who were in no way involved in the investigation. They were given the interview protocols with no identification of Ss as to treatment. The judges proceeded to rate self-concept for each S as high, somewhat high, somewhat low, and low. (A copy of the scale appears in Appendix C.)

Regarding judge agreement, there was a near-perfect correspondence for experimental Ss in change scores from pre to post, but the same figures for the two control groups were near zero. (The analysis is contained in Appendix A.) Since the disagreements in the control groups seemed to form a chance pattern, the data were combined and averaged for the two judges in all instances. The analytical outcomes are presented in Table 8.

Five of the seven experimental Ss gained from pre- to posttest and the two reversals were slight. The gain was significant at the 5% level. Change scores were insignificant for both control groups, and less than half the Ss gained from pre- to posttest.

TABLE 8

Distribution and Analytical Statistics for Change Scores
Based on Ratings of Self-concept by Two Observers
Using an Overall Four-Point Scale

Distribution statistics	Experimental	Farm control	School control
N	7	7	7
Mean	0.8	0.1	0.4
Median	1.0	0.0	0.0
Range	3.0	2.5	2.0
No. gaining	5	2	4
p-value	.05	.48	.39
Overall phi		.34	
Overall p-value		.06	

Differences across groups are, of course, the focal point of the analysis. The overall phi coefficient emerging from the data was significant at the .06 level, with a value of .34. Rank analysis of variance yields precisely the same probability, and the t-test based on a combination of the two C groups generates a p-value of .075.

None of these differences is statistically impressive, but as with several other measures bearing on self-concept, a suggestive trend emerges for the experimental group to show more gain than the control groups.

Overview of Findings

The major portion of the interpretation and discussion of these findings will be left to the next section of the report, but at this point it seems appropriate to make some overview statement concerning the outcomes because of the masses of data subsumed in the tables covered in the current results section of the report.

It is clear at the outset that the experimental intervention procedure of modifying the speech behavior of inmates in the current learning situation generated large, consistent, and significant changes in their speech patterns. The common thread running throughout the tables indicates that experimental Ss almost consistently perform at a higher level at the variety of tasks involving speech behavior, as contrasted with the control groups. Equally significant, although not necessarily quite so apparent, is the fact that there was consistent, appreciable generalization of speech modification to areas of speech usage other than that in which the Ss were trained. That is to say, experimental Ss quite consistently, both individually and as a group, exhibited generalization and transfer of behavior

from the oral intervention training to several different situations related in varying degrees to the oral training which they had undergone.

In line with these findings, there was evidence from several indices of an increase in self-concept in treated Ss. The important area of generalization in this investigation demands experimentation of its own. All dimensions of behavioral change show clear effects, so marked and clear-cut in many instances that the behavior of individuals changed consistently and the treatment of the data could focus on individual rather than group performance. This outcome is an essential point as one must zero in on individual, custom-tailoring of intervention to the particular person at hand in a variety of rehabilitation and intervention programs.

DISCUSSION

The intent of this experiment was to experimentally examine two major dimensions of behavioral change: (1) modification of the offender's speech by a short term intervention program to conform to more standard English usage and (2) the amount of generalization or transfer affects associated with oral training. The method was a second-language approach to oral usage. In essence, more standard English was learned by the participant offenders. Intervention centered around the use of language as a tool to cope with basic environmental events--employers, other inmates, female peers, and figures of authority. The first objective was quite strikingly achieved in that standard English usage was increased on the average by more than one-third and showed appreciable increments in all experimental Ss.

The second objective was also achieved: there was clearcut individual transfer of the speech training to a variety of situations differing in varying degrees from the original training and learning situation of the experiment. For instance, transfer amounting to the order of 20% was noted in connection with written usage where training had concentrated entirely on oral usage. Again, all Ss showed the effect. This degree of generalization and overall outcomes are to be contrasted with the schoolrom situation where focus is brought to bear on WU, and there appears to be minimal transfer from written training to oral. OU is, of course, the more basic avenue of communication.

In addition, there was a trend for generalization and behavioral change to occur along the dimension of self-concept. This effet was not large, but appeared in several different indices suggesting nee for follow-up with particular initial regard for more precise behavoral definition of self-concept in the inmate population. The findingthat

self-concept is enhanced by acquisition of a language tool for coping with significant environmental figures is provocative of much research. The self-concept outcomes, however, must be taken with a grain of salt in the light of the relatively small differences obtained and the fact that chance was maximized by employing a large number of measurements in a number of instances particularly in the case of the Tennessee Self Concept Scale.

Also noteworthy in this connection was the generalization of standard speech from the training situation to "spontaneous" speech. Again, the effects were relatively small but consistent with other findings in showing greater increments for the intervention group as contrasted with the comparison Ss.

This series of experiments was designed in such a way that each set of three Ss--experimental, farm control and school control--were carefully matched so as to represent a sub-experiment, and the seven sets of Ss thus constituted in a limited sense seven replications of the same experiment. The findings of the investigation were quite striking that OU can be trained to coverage on the standard and that these effects generalize to a variety of situations. Despite the magnitude and high consistency of the outcomes, considerable replication and follow-up experimentation is needed.

One question that may be asked in this connection is the relative weight of the drill practice and the discussion seminar in contributing to the changes in standard English usage in a spoken sense as well as the generalized effects that emerged. It is difficult to disentangle and deconfound on an *a priori* basis these two sources of variation without some experimental foundation for so doing.

It should be noted in this connection that it is a tenable hypothesis that if the generalized effects of spoken behavior are to be examined in the context of environmental problem solving, particularly with significant

people in it, then it is essential that a strong habit of verbalizing in the presence of people be established. It will be recalled that one of the implicit aims of this experiment in teaching more standard English usage was to provide the offender with a tool for coping with his environment. For instance, he could use verbal behavior to manipulate and control another individual rather than physical force. Similarly with regards to employment, the individual can learn to speak more standard English so as to enhance the chances of job procurement. The parameters of habit strength require experimental examination.

In this context, a major problem lies in discrimination formation with regard to what might be called "situational speech." That is, S must learn that it is appropriate to emit standard English in the presence of certain kinds or classes of people but not in the presence of others. For example, it is appropriate when talking to an employer who is a college graduate to use more standard English. But when talking to a fellow offender who has a second-grade education it would seem inappropriate to use the more exact version of the English language for communication, and the individual might do well to fall back on his former mode of response. This item, in turn, spins off into a generalized problem of teaching the individual to respond in ways that maximally generalize in his environment and at the same time changing his behavior in such a way that he learns to change his own environment in a self-management sense. That is to say, he no longer will return to the environment that generated his previous criminal behavior, but upon release from the prison situation has the built-in habit of seeking out a non-criminal environment where the probabilities of his becoming involved in crime are greatly decreased.

There is another point with regard to generalization that needs detail experimental examination. One of the potential generalized effects of speech intervention is that the individual will seek a different

environment or at least cope more satisfactorily with his old environment. There is the real possibility (that is to be hoped for) that given the language tool the individual will be more capable of a sustained effort vocationally and avocationally so that there will be no "need" for him to return to the prison situation. In any event, follow-up studies of a rather long-range generalization nature lasting a couple of years are needed to examine such matters as employment and recidivism rates among individuals treated with the speech intervention and other forms of behavioral change. Obviously, it is an extremely difficult if not impossible mission to disentagle the effects of speech intervention from other interventions that have occurred both within and upon release from the prison situation. In any case, however, a worthwhile project is to follow up to see what, if any, changes in behavior do occur outside the prison setting and how long they persist.

Another dimension for experimental variation is the nature and duration of the experimental intervention. In the case at hand intervention took place for two hours a day, five days a week over a period of some five weeks excluding pre- and posttesting. This is a relatively short duration of intervention, and it is conceivable that more far-reaching effects might well accrue to a treatment procedure that lasted for several months and occupied a considerably larger portion of S's day including emphasis on making English usage in an oral sense more standard in a variety of situations in and out of the classroom. This is not to say, however, that the current direct and generalized effects of speech intervention were not large. On the contrary, they were larger than one might have expected from the pertinent literature in the field of psycholinguistics.

Upon careful verbal analysis of the experimental package employed in this investigation, both the drills and the content of the seminars, a training program could well be developed for incorporation into an NDT

program in the more formal school situation. It seems quite reasonable that the program of research suggested in previous paragraphs go on hand-in-hand with the development of a training package for employment in the school situation.

Another major area of concern for future experimental analysis and examination consists of selection and refinement of assessment procedures and measures. For instance, in the current situation, while the Tennessee Self-Concept Scale was the most standardized available instrument, it is felt that a major research push should proceed on the development of an instrument that is more behaviorally oriented toward the particular problems of the offender in the prison situation where the instrument will be employed. One possibility is to take off from the methodology employed by Pascal and Jenkins (1961) in their development of the University of Tennessee Deprivation Scale for assessing cross-sectional or current behavioral functioning of hospitalized ulcer patients and county-workhouse "skid-row" alcoholics. This instrument was developed to obtain, in a direct behavioral report from the subject, a recounting of exactly how he copes with the environment, what he gives to his environment behaviorally, and what he receives from it with particular reference to people and to a lesser extent institutions and organizations as extensions of the human dimension. This instrument has extremely fine discriminating power and sensitivity for differentiating between patients who will respond favorably to surgical intervention and those who will retain their ulcer symptomatology. (It is currently being used in the Draper postrelease follow-up study of long-range behavioral measurement and intervention.) In any event, a follow-up methodology of this variety in the self-concept area might well turn up some profitable leads. It is to be noted that self-concept is mentioned by most authorities in the rehabilitation and corrections field as a major

problem in dealing with criminal behavior and recidivism. The problem of an individual's "feelings of inadequacy" leading to defensive exhibition of his superiority by violation of societal law is well established.

In this connection it would seem that what is needed along these lines is not merely a behavioral estimate of the individual's self-concept, but also a differential score that relates his self-concept to observations of his actual behavioral production. This is a problem, of course, in the area of classical level of aspiration. The whole area of self-concept needs a thorough experimental working-over.

Other measures that need a refinement and reworking are the verbal and behavioral checklists as well as the structured interview itself which should be oriented toward obtaining a more complete picture of the individual's actual behaviors with people in his environment. In addition, "spontaneous" speech measure via movie description yielded a relatively low incidence of errors of the order of less than a couple of percent. It would be worthwhile to find some other baseline vehicle that would yield a higher error level so that a greater opportunity would be available for gain to be associated with intervention.

All in all, this project has accomplished its major purposes, namely, to demonstrate that experimental intervention can significantly raise the level of standard English usage and that in so doing it creates so strong a habit that it generalizes to a number of other behavioral spheres. At the same time the investigation has met one of the more ultimate criteria of basic research in that it has been hypothesis-generating and has suggested a number of problems for follow-up treatment.

CONCLUSIONS AND RECOMMENDATIONS

Since the discussion section has pin-pointed many of the dimensions and problem areas of oral English usage and speech modification and has served as a springboard for stating the conclusions, it is necessary here only to present overall inferences in outline form. These follow:

1. Speech intervention involving drill and discussion generates a substantial gain in standard English usage of an oral variety.

2. The effects of this training transfer and generalize on a large scale to written English usage.

3. When spontaneous speech is measured, Ss treated with the OU intervention exhibited a superiority over baseline groups not so treated.

4. Change in self-concept via the Tennessee Self Concept Scale yielded ambiguous results because roughly half the variables yielded a negative relationship and the other half yielded a positive relationship. The variables, however, yielding the highest relationship form a pattern which suggests a tendency for experimental Ss to show a slightly greater gain in self-concept than control Ss. The results are again consistent with a generalization hypothesis that providing a language tool to offenders gives them an opportunity to acquire increased self-concept.

5. Ratings of the outcome of structured interviews attempting to get more directly at a behavioral index of self-concept yield data consistent with the findings of the Tennessee Self Concept Scale in that they suggest that experimental Ss showed slightly more gains in a rough rating of self-concept than did control Ss.

6. Verbal and non verbal checklists administered in connection with the structured interviews indicated a trend for experimental Ss to show more gain in verbal behavior than control Ss although the effects were not marked and the control groups show slightly greater gain in nonverbal behavior in the interview situation.

7. Further research is needed examining the major parameters of the speech intervention program along with development of new meausres and refinement of available ones for detection of direct and generalized changes in behavior associated with oral-usage intervention.

8. Findings of this project clearly suggest that if intervention is to be effective it must not merely modify behavior under experimental scrutiny but must also demonstrate generalized lasting effects of behavioral change in a wide variety of stimulus situations. Only in this way can any intervention program have an enhanced probability of being effective when the person, in this case the offender, is returned to the "free world" and called on to operate on the basis of his own behavioral resources.

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Appendix A

Data

TABLE A

Pre- and Posttest Raw Scores (Number Correct) and Percentage Change Scores Separately by Experimental Condition (Experimental Ss, Farm Ss, and School Ss,) by Measure or Task (OU, WU, and PD) for Each of the Individual Ss.

Condition	Pretest			Posttest			Percentage change		
Experimental Ss	OU	WU	PD	OU	WU	PD	OU	WU	PD
G. B.	36	21	84	42	26	86	16.7	23.8	2.4
E. A.	31	23	81	42	25	95	35.5	8.7	17.3
D. G.	29	24	91	45	27	98	55.2	12.5	7.7
C. H.	31	17	76	37	21	81	19.4	23.5	6.6
E. H.	29	16	74	41	26	81	41.4	62.5	9.5
W. L.	28	20	85	38	22	89	35.7	10.0	4.7
D. S.	28	22	83	43	26	89	53.6	18.2	7.2
Farm Ss (control)									
M. T.	37	18	88	32	22	96	-13.5	22.2	10.0
B. M.	32	21	89	30	14	92	- 6.2	-33.3	3.3
A. C.	30	17	79	30	14	89	0.0	-17.6	12.6
J. D.	30	21	85	31	16	85	3.3	-23.8	0.0
T. McC.	29	8	76	27	10	88	- 6.9	25.0	15.8
G. O.	28	11	80	28	14	90	0.0	27.3	12.5
J. F.	26	15	76	30	13	85	15.4	-13.3	11.8
School Ss (control)									
W. B.	31	15	82	23	14	75	-25.8	- 6.7	- 8.5
B. B.	28	8	80	26	6	70	- 7.1	-25.0	-12.5
B. E.	38	16	86	31	16	73	-18.4	0.0	-15.1
T. H.	33	12	64	27	13	63	-18.2	8.3	- 1.6
J. H.	27	13	82	24	15	79	-11.1	15.4	- 3.7
P. P.	27	22	85	32	21	69	18.5	- 4.5	-18.8
E. T.	26	12	52	19	7	62	-26.9	-41.7	19.2

TABLE B

Percentage Change Scores from Pre- to Posttest
Separately by Conditions and Measures
for Individual Ss along with Analytical Statistus

Experimental Ss	OU	WU	PD	Analysis
G. B.	16.7	23.8	2.4	
E. A.	35.5	8.7	17.3	$F_{Range} = 5.7$
D. G.	55.2	12.5	7.7	$p = < .01$
C. H.	19.4	23.5	6.6	
E. H.	41.4	62.5	9.5	JIC = .48
W. L.	35.7	10.0	4.7	p = .03
D. S.	53.6	18.2	7.2	
Mean	36.8	22.7	7.9	
Median	35.7	18.2	7.2	
Farm Ss				
M. T.	-13.5	22.2	10.0	$F_{Range} = 2.3$
B. M.	- 6.2	-33.3	3.3	p = 7.10
A. C.	0.0	-17.6	12.6	
J. D.	3.3	-23.8	0.0	JIC = -.19
T. McC.	- 6.9	25.0	15.8	p = .25
G. O.	0.0	27.3	12.5	
J. F.	15.4	-13.3	11.8	
Mean	- 1.1	- 1.9	9.4	
Median	0.0	-13.3	11.8	
School Ss				
W. B.	-25.8	- 6.7	- 8.5	$F_{Range} = .1$
B. B.	- 7.1	-25.0	-12.5	$p = > .10$
B. E.	-18.4	0.0	-15.1	
T. H.	-18.2	8.3	- 1.6	JIC = .11
J. H.	-11.1	15.4	- 3.7	p = .35
P. P.	18.5	- 4.5	-18.8	
E. T.	-26.9	-41.7	19.2	
Mean	-12.7	- 7.7	- 5.9	
Median	-18.2	- 4.5	- 8.5	
JIC	.63	.30	.40	.52
p	.002	.11	.07	$< .001$

TABLE C

Overall Analysis of Variance by Condition (Treatment) and Speech Task (Based on Percentage Difference Scores from Pre- to Posttest)

Source	F-value	p-value
Condition (treatment) Experimental Ss vs. Farm Ss vs. School Ss	12.3	<.001
Speech task OU vs. WU vs. PD	6.0	.01
Interaction: condition by task	4.0	.03

TABLE D

Oral Usage Sub-measure Error Count by
Experimental Condition for Each of the Individual Ss

Experimental Ss									Farm Ss								School Ss							
Ss		T[a]	#	P	00	Adv.	D	Total	Ss	T	#	P	00	Adv.	D	Total	Ss	T	#	P	00	Adv.	D	Total
G. B.	b	7	1	3	1	1	0	13	M. T.	6	4	2	1	0	0	13	W. B.	8	3	2	4	1	1	19
	c	3	1	4	0	0	0	8		7	3	5	0	2	1	18		11	4	3	5	3	1	27
E. A.		7	3	3	4	2	0	19	B. M.	7	1	2	6	2	0	18	B. B.	9	2	4	4	2	1	22
		3	1	4	0	0	0	8		7	3	5	2	3	0	20		10	3	4	4	2	1	24
D. G.		8	3	4	3	2	0	20	A. C.	8	1	4	5	2	0	20	B. E.	7	0	4	1	0	0	12
		2	0	0	2	1	0	5		7	0	5	5	2	1	20		8	2	4	2	2	1	19
C. H.		10	2	3	3	1	0	19	J. D.	9	4	3	3	1	0	20	T. H.	11	3	5	2	2	1	24
		4	2	4	3	0	0	13		6	3	4	4	2	0	19		9	2	4	3	3	2	23
E. H.		8	4	4	5	1	0	22	McC.	7	3	3	6	2	0	21	J. H.	10	3	3	5	1	1	23
		4	1	2	0	2	0	9		8	3	3	5	2	2	23		11	4	3	6	2	1	27
W. L.		12	1	3	4	2	0	22	G. O.	8	4	4	4	2	0	22	P. P.	10	4	3	4	1	1	23
		6	1	4	0	1	0	12		7	3	4	5	2	1	22		9	3	2	2	2	0	18
D. S.		7	3	5	5	2	0	22	J. F.	10	2	4	6	2	0	24	E. T.	11	4	3	5	1	0	24
		0	2	3	1	7	0	7		10	2	4	1	2	0	20		12	5	4	7	2	1	31

[a]Types of errors: T = tense
# = subject-verb agreement (number
P = pronouns
00 = double negative
Adv. = incorrect usage of adverbs and adjectives
D = demonstratives

[b]Top row: Pretest
[c]Bottom row: Posttest

TABLE E

Written Usage Sub-measure Error Count by
Experimental Condition for Each of the Individual Ss

Experimental Ss									Farm Ss								School Ss							
Ss		T[a]	#	P	00	Adv.	D	Total	Ss	T	#	P	00	Adv.	D	Total	Ss	T	#	P	00	Adv.	D	Total
G. B.	b	1	3	3	0	2	0	9	M. T.	2	2	2	1	2	3	12	W. B.	3	7	2	1	2	0	15
	c	0	2	1	0	1	0	4		1	3	1	0	2	1	8		3	3	2	4	2	2	16
E. A.		1	2	1	2	0	1	7	B. M.	2	2	2	1	2	0	9	B. B.	4	5	3	4	2	4	22
		2	2	1	0	0	0	5		4	4	3	2	2	1	16		5	6	3	4	2	4	24
D. G.		1	2	1	0	2	0	6	A. C.	2	3	2	4	2	0	13	B. E.	4	3	2	3	1	1	14
		0	2	0	0	1	0	3		3	5	2	4	2	0	16		1	7	1	5	1	1	16
C. H.		2	5	2	2	1	1	13	J. D.	2	3	2	1	1	0	9	T. H.	4	6	2	4	2	0	18
		3	3	1	2	0	0	9		3	5	2	3	1	0	14		4	5	3	3	0	2	17
E. H.		3	5	1	4	1	0	14	T. McC.	5	7	4	2	2	2	22	J. H.	4	5	2	2	2	2	17
		0	3	0	0	1	0	4		4	5	4	4	1	1	20		4	4	1	2	2	2	15
W. L.		5	1	1	1	2	0	10	G. O.	4	7	2	4	2	0	19	P. P.	1	2	2	1	2	0	8
		4	2	0	0	2	0	8		3	6	2	4	1	0	16		3	3	2	0	1	0	9
D. S.		0	1	2	3	2	0	8	J. F.	3	5	2	3	2	0	15	E. T.	4	5	2	4	2	1	18
		0	1	1	0	2	0	4		2	6	3	4	2	0	17		5	6	2	4	2	4	23

[a]Types of errors: T = tense
# = subject-verb agreement (number)
P = pronouns
00 = double negatives
Adv. = incorrect usage of adverbs and adjectives
D = demonstratives

[b]Top row: pretest
[c]Bottom row: posttest

TABLE F

Sub-measure Analysis: Difference in Raw Scores
Oral Usage

Sub-measure	E	Farm	School	F_{Range}	p	JIC
Tense						
Mean	5.3	1.0	0.6			
Median	6.0	1.0	2.0	4.9	.04	.36
Range	3.0	5.0	12.0			
Subject-verb agreement						
Mean	1.3	0.3	- 0.3			
Median	1.0	1.0	0.0	3.1	.12	.32
Range	3.0	4.0	3.0			
Pronouns						
Mean	0.6	- 1.1	- 0.4			
Median	- 1.0	- 1.0	0.0	3.3	.17	.24
Range	5.0	3.0	3.0			
Double negatives						
Mean	2.7	0.6	- 1.6			
Median	4.0	- 1.0	- 1.0	6.5	$<.01$	.48
Range	5.0	5.0	4.0			
Adverbs						
Mean	0.9	- 0.6	- 0.7			
Median	1.0	0.0	0.0	5.0	.03	.40
Range	3.0	2.0	2.0			
All measures						
Mean	10.7	0.0	- 3.0			
Median	11.0	0.0	- 3.0			
Range	10.0	9.0	13	15.9	$<.001$	.60

TABLE G

Sub-measure Analysis: Difference in Raw Scores
Written Usage

Sub-measure	E	Farm	School	F Range	p	JIC
Tense						
Mean	0.6	0.0	0.0			
Median	1.0	1.0	0.0	1.0	.45	.12
Range	4.0	3.0	5.0			
Subject-verb agreement						
Mean	0.6	- 0.9	- 0.3			
Median	0.0	- 1.0	- 1.0	2.5	.22	.19
Range	3.0	3.0	8.0			
Pronouns						
Mean	1.0	- 0.1	0.0			
Median	1.0	0.0	0.0	3.4	.11	.37
Range	2.0	2.0	2.0			
Double negatives						
Mean	1.4	- 0.7	0.3			
Median	1.0	- 1.0	0.0	3.4	.18	.30
Range	4.0	3.0	6.0			
Adverbs						
Mean	0.4	0.3	0.1			
Median	0.0	0.0	0.0	5.2	.02	.30
Range	1.0	1.0	1.0			
All measures						
Mean	4.3	- 1.1	- 1.4			
Median	4.0	- 2.0	- 2.0	4.6	.05	.34
Range	8.0	11.0	7.0			

TABLE H

Overall Analysis of Variance
by Sub-test Measures

Source	F-value	p-value
Oral vs. written usage	4.2	.06
Sub-test measures	3.5	.05
Interaction: oral-written by sub-test	3.0	.07

TABLE I

Test of Significance by Sub-measures; Oral vs. Written Usage: Experimental, Farm Control, and School Control

Sub-measures	Percent difference	Overall correlation	Overall probability	Experimental group: oral vs. written probability
Tense	80.0	.29	.046	.004
Subject-verb agreement	- 33.3	-.19	.40	.20
Pronouns	- 33.3	.19	.40	-.08
Double negatives	80.0	.22	.30	.25
Adverbs	800.0	.27	.30	.35
All measures OU vs. WU	60.8	.16	.125	.078
Tense, double negatives, and adverbs	106.7	.485	.006	.01

TABLE J

'Spontaneous' Speech (Movie Description):
Errors from Pre- to Posttest
Difference in Percent

Set	Experimental	Farm	School
1	-0.37	-0.47	-2.87
2	0.66	-3.50	1.70
3	0.46	-0.61	-0.08
4	1.74	-0.04	2.45
5	1.52	-0.80	2.10
6	-0.27	-0.46	-1.74
7	0.14	0.58	1.94
Mean	0.55	-0.76	0.49
Median	0.46	-0.47	1.70
Range	-.37 to 1.74	-3.50 to .58	-2.87 to 2.45

JIC = .25

p = .145

TABLE K

Change Scores on Checklists for Verbal and Nonverbal Behavior Based on Observations During the Structured Interview

Verbal behavior checklist difference scores (pre- minus posttest)

Pair	Experimental	Farm Control	Experimental-Control
1	4	-2	6
2	3	1	2
3	0	-2	2
4	0	0	0
5	-2	0	-2
6	2	-1	3
7	-2	0	-2
Mean	0.7	-0.6	1.3
Median	0.0	0.0	2.0

t = 2.0 df = 6 p = .046 Ø = .31

Nonverbal behavior checklist difference scores (pre- minus posttest)

1	3	1	2
2	5	1	4
3	-5	0	-5
4	-2	-1	-1
5	-6	-1	-5
6	2	1	1
7	-3	-1	-2
Mean	-0.9	0	-6
Median	-2.0	0.0	-1.0

t = -0.7 df = 6 p = .26 Ø = -.10

TABLE L

Self-concept Ratings: Agreement
of Two Judges (VB & NAM)

	Experimental Ss		Farm Ss		School Ss	
	NAM		NAM		NAM	
	Hi	Lo	Hi	Lo	Hi	Lo
(VB) Hi	4	0	3	1	1	3
(VB) Lo	1	2	3	0	1	2
	Ø = .64		Ø = .35		Ø = -.09	

All control Ss

	NAM	
	Hi	Lo
(VB) Hi	4	4
(VB) Lo	4	2

Ø = -.168

All Ss combined (experimental and control)

	NAM		
	Hi	Lo	Total
(VB) Hi	8	4	12
(VB) Lo	5	4	9
Total	13	8	21

Ø = +.113

TABLE M

Ratings of Self-concept Difference
Scores Post- Minus Pretest
for Two Judges (NAM & VB)

NAM data

Set	Experimental Ss	Farm Ss	School Ss
1 (E. A.)	1	1	1
2 (G. B.)	1	0	0
3 (D. G.)	1	1	0
4 (E. H.)	1	1[a]	2
5 (C. H.)	0	1	0[a]
6 (W. L.)	0	1	0
7 (D. S.)	2	1	-1
Total	6	6	2
Mean	0.86	0.86	0.29
Median	1.0	1.0	0.0

t = 1.5 df = 6 p = .03

VB data

1 (E. A.)	1[b]	0	1
2 (G. B.)	2	0	-1
3 (D. G.)	1	-1	0
4 (E. H.)	0	-2	0
5 (C. H.)	-1	1	0[b]
6 (W. L.)	-1	-1	0
7 (D. S.)	3	2	0
Total	5	-1	0
Mean	0.7	-0.1	0.0
Median	1.0	0.0	0.0

t = .8 df = 6 p = .22

[a]Estimated from VB data.
[b]Estimated from NAM data.

TABLE N

Self-concept Ratings (Pre- and Posttest):
Averages of Two Judges (NAM & VB)

Set	Experimental Ss			Farm Ss			School Ss		
	Pre	Post	D	Pre	Post	D	Pre	Post	D
1	3.5	2.0	1.5	3.0	2.5	0.5	3.0	2.0	1.0
2	3.5	2.5	1.0	4.0	4.0	0.0	3.0	2.5	0.5
3	2.5	3.0	-0.5	2.5	2.5	0.0	4.0	4.0	0.0
4	3.0	2.0	1.0	3.5	3.5	0.0	2.0	2.0	0.0
5	2.5	2.0	0.5	3.0	4.0	-1	3.5	2.0	1.5
6	2.0	2.5	-0.5	3.0	3.0	0.0	3.0	3.0	0.0
7	4.0	1.5	2.5	3.0	1.5	1.5	2.0	2.5	-0.5
Total	21.0	15.5	5.5	22.0	21.0	1.0	20.5	18.0	2.5
Mean	3.0	2.2	0.8	3.1	3.0	0.1	2.9	2.6	0.3
Median	3.0	2.0	1.0	3.0	3.0	0.0	3.0	2.5	0.0
Range	2.0	1.5	3.0	1.5	2.5	2.5	2.0	1.5	2.0

TABLE O

Changes in Self-concept: t-Test
for Experimental Ss vs. the Average of Farm
and School Ss and Phi-Coefficient

Set	Experimental Ss	Average of Farm & School Ss	Difference
1	1.5	0.75	.75
2	1.0	0.25	.75
3	-0.5	0.00	- .50
4	1.0	0.00	1.00
5	0.5	0.25	.25
6	-0.5	0.00	- .50
7	2.5	0.50	2.00
Total	5.5	1.55	3.75
Mean	0.786	0.22	0.54
Median	1.0	0.25	0.75

t = 1.64 df = 6 p = .075

	Hi	Lo
Experimentals	5	2
Controls	5	9

Ø = .337 p = .075

TABLE P

Rank Analysis of Variance for the Pre-Post Difference Scores Contained in Table N

Set	Experimental Ss	Farm Ss	School Ss
1	1	3	2
2	1	3	2
3	3	1.5	1.5
4	1	2.5	2.5
5	2	3	1
6	3	1.5	1.5
7	1	2	3
Total R	12	16.5	13.5
Total R^2	144	302.25	182.25

$X_{R^2} = 5.8$ df = 2 p = .06 JIC = .286

Appendix B

Technical Appendix

JIC

TECHNICAL APPENDIX

Technical Note on a New Test of Significance: The Jenkins Index of Covariation (JIC)

W. O. Jenkins, Auburn University

During the course of data analysis on the Speech Modification Project and in connection with certain other projects, a new short-cut, "quick and dirty" statistical procedure was developed which has considerable power and sensitivity as well as appreciable efficiency in terms of ease of computation and comprehension. It applies whenever there are two or more sets of data to be compared and contrasted as to whether the two or more samples could have been drawn from a common population. It is related to both the traditional analysis of variance technique and to correlational procedures. In essense it does the job of both but in less than one-tenth of the time of either one. Furthermore, it is easy to grasp.

In brief, the Jenkins Index of Covariation (JIC) consists of a ratio between an estimate of the variation across experimental conditions contrasted with the variation across Ss. In other words, it is essentially an analysis of variance procedure. At the same time, it yields a correlational figure that is interpreted as such. Put another way, it consists of an ANOVA procedure yielding a correlational figure that can be referred for probability level to a standard correlational table of significance.

The procedure itself consists of taking the ratio between the largest and smallest averages (the range among averages) and dividing this difference by the difference between the highest and lowest scores obtained by individual Ss (the range among Ss). It is closely tied into one-way or single-classification analysis of variance, but instead of the cumbersome numerical manipulations required of the latter, it depends only on the

determination of four numbers: the highest and the lowest average and the highest and lowest individual score. The JIC is based on the ratio of the two differences, that is, the range across averages divided by the range across individual scores.

In addition to the obvious efficiency of this procedure in terms of time, it should also be noted that the procedure is independent of the form of functional relationship between the experimental variation, on the one hand and the behavioral measurement on the other. In other words, it makes no difference whether the relationship between the experimental procedure and the behavioral measurement is linear, curvilinear, parabolic or quadratic. The shape of the function is determined by inspection of the data or quantitative curve fitting. The JIC simply indicates the extent to which the variation in the averages is great enough relative to variation in Ss to warrant rejection of the null hypothesis. In can be considered the generalized model for the analysis of variance in the simplest possible form.

Appendix C

Instruments

TEST ON ORAL ENGLISH USAGE

1. Why don't you bring Mary and him here?
2. Bob give a dime to his brother yesterady.
3. Them boys broke the window.
4. You weren't in the cafeteria at noon.
5. He opened the door for Mary and me.
6. I haven't spoke to him for a month.
7. James never seen the book.
8. He won't do nothing about it.
9. We done our best to win.
10. He knows hardly anyone in the city.
11. I don't want none of these books.
12. Jack went to the World's Fair with mother and him.
13. We didn't see nobody when we went to the door.
14. I don't like any of those magazines.
15. Don't you know anybody in town?
16. She can't find no eggs in the regrigerator.
17. They have wrote the letter.
18. Roy has eaten all of my candy.
19. I have done said it.
20. The noise in the gym grew loudly.
21. They was in the gym playing basketball.
22. We can't scarcely hear what he's saying.
23. I couldn't barely see ten feet ahead.
24. He's ate the cake already.
25. The fruit has been shaken out of the tree.
26. Who done it?

27. Them and the others went swimming in our pool.

28. You and she should get to know each other.

29. I have went there before.

30. May I ride with you and she?

31. He seemed bitter about it.

32. The dog has fallen into the pool again.

33. We weren't able to stop him.

34. I like those pictures on the wall.

35. She's broken both arms before.

36. Are them the abandoned children?

37. The fish tasted very strange.

38. That happened before Doug and I learned to swim.

39. The tea tastes too sweetly.

40. He don't seem to understand your question.

41. I ate my breakfast.

42. I saw them boys yesterday.

43. She hasn't wrote to me yet.

44. He done his homework very neatly.

45. The men have no work.

46. I seen him.

47. Was you able to explore the cave?

48. Leave the book for Jack and I to read.

49. It don't look like the right answer.

50. Our grandmother hasn't wrote since Christmas.

Test on Written English Usage

Directions: Some of the following sentences are grammatically correct and some incorrect. If you think the sentence is correct, write "C" in the blank at the right; if the sentence is wrong, write it correctly in the appropriate blank.

1. The pipes have froze in the cold weather. _____
_____

2. The bell rung early. _____
_____

3. A ball and bat have been left on the field. _____
_____

4. There goes Henry and Sam._____
_____

5. It don't seem right to add instead of multiply. _____
_____

6. Mary and he plan to go to the meeting. _____
_____

7. Why does the child look so sad? _____
_____

8. I couldn't hardly hear you. _____
_____

9. He gave the cookies to we boys. _____
_____

10. I can't find them scissors. _____
_____

11. The magazines are for Mary and he. _____
_____

12. Gene struck out twice and then hits a single. _____
_____

13. Connie felt badly about losing her ring. _____
_____

14. Them boys are planning to go. _____
_____

15. A church and school are close to our house. _____
_____

Test on Written English Usage (Continued)

16. We was the first ones there. _____

17. The hot, buttered popcorn tasted delicious. _____

18. That wasn't no surprise to Jack and me. _____

19. Yesterday I brung two sandwiches for lunch. _____

20. I have ate my lunch. _____

21. The car belongs to John and I. _____

22. This new rule don't seem fair to me. _____

23. How much is the sugared doughnuts? _____

24. They aren't no hungrier than the rest of us are. _____

25. He hardly wants to go. _____

26. Are them the abandoned children? _____

27. There is three candidates in the race. _____

28. The music sounds softly in the background. _____

29. They haven't never been there. _____

30. Them boys broke the window. _____

Test on Phoneme Discrimination
(Oral to Written)

1.	seem	deem	seem
2.	ache	ate	ache
3.	tight	tight	tie
4.	beat	but	boot
5.	leap	leaf	leaf
6.	not	dot	lot
7.	sniffs	sniff	sniffs
8.	view	you	you
9.	march	mark	mar
10.	damp	dam	dam
11.	else	elf	elf
12.	canyon	canyon	cannon
13.	jinxed	jinx	jinx
14.	sacking	sagging	sagging
15.	pat	pat	cat
16.	its	itched	itch
17.	roles	rob	rob
18.	hand	hanged	hanged
19.	tice	twice	twice
20.	witch	with	witch
21.	washed	wash	washed
22.	die	thigh	thy
23.	split	split	slit
24.	month	mud	mud
25.	pump	pumped	pumped

26.	loaf	loaves	loaf
27.	adds	adds	add
28.	robbed	robbed	rob
29.	reek	shriek	reek
30.	hard	car	car
31.	budged	budged	budge
32.	pine	pie	pine
33.	pithy	pity	pity
34.	coat	cut	coat
35.	the	Z	Z
36.	gassed	gasp	gasped
37.	welch	welched	welch
38.	links	lakes	lakes
39.	delved	delve	delved
40.	fuzzy	fussy	fuzzy
41.	tensed	tense	tense
42.	black	lack	black
43.	four	fork	fork
44.	cool	cool	cold
45.	sip	sit	sick
46.	lack	tack	lack
47.	fly	lie	lie
48.	use	fuse	use
49.	rye	rye	rhyme
50.	asp	asps	asp
51.	box	boxed	box
52.	killed	kiln	kiln
53.	massing	mashing	mashing

54.	crump	rump	crump
55.	to	to	tour
56.	cut	cot	cot
57.	coil	kill	call
58.	tuck	took	tuck
59.	vote	boat	vote
60.	prompt	prompts	prompt
61.	car	curs	car
62.	film	film	filmed
63.	adds	asked	adds
64.	text	text	text
65.	walked	walked	walk
66.	Ed	ed	aid
67.	it	it	ate
68.	clothing	closing	clothing
69.	loaf	loaf	loaves
70.	ask	ask	asks
71.	raid	wade	raid
72.	sink	sink	sing
73.	add	aid	aid
74.	add	ed	ed
75.	hem	hems	hems
76.	elves	elf	elve
77.	split	spit	split
78.	rope	robe	robe
79.	rowing	roving	roving
80.	earp	up	up
81.	glimpse	glimpse	glimpsed

82.	plan	planned	planned
83.	rouzed	rouge	rouge
84.	pass	past	past
85.	or	are	are
86.	add	odd	odd
87.	bird	bud	bud
88.	wheel	wheel	veal
89.	owes	owes	ooze
90.	depths	depths	death
91.	cat	cot	cot
92.	play	lay	play
93.	bulbs	bold	bulbs
94.	mouth	mouth	mouth
95.	lap	clap	lap
96.	rapid	rabid	rabid
97.	ring	rim	ring
98.	mast	mast	masts
99.	asked	asked	ask
100.	sign	sight	sight

Verbal Behavior Checklist

Name_____ Date_____

1. Latency:	Fast	Medium	Slow
2. Amount:	Much	Intermediate	Little
3. Rate:	Fast	Medium	Slow
4. Loudness:	High	Medium	Low
5. Pitch:	High	Medium	Low
6. Changes in Loudness and Pitch:	Frequent	Intermediate	Infrequent

Comments _____

_____

_____

_____

Nonverbal Behavior Checklist

Name_____ Date_____

1. Physiological behaviors: (sweating, blushing, fast breathing, etc.)	Frequent	Intermediate	Infrequent
2. Tremor and shaking:	Frequent	Intermediate	Infrequent
3. Posture:	Relaxed	Intermediate	Tense
4. Body movements:	Frequent	Intermediate	Infrequent
5. Looks at and responds to examiner:	Frequent	Intermediate	Infrequent
6. Change in facial expression:	Frequent	Intermediate	Infrequent
7. Special behaviors: (nail-biting, scratching, tics, locomotion, etc. cite)	Frequent	Intermediate	Infrequent

Comments _____

_____

_____

_____

Self-concept Ratings from Interviews

Date _____

Subject's name _____

Examiner's name _____

After reading the interview transcript carefully, rate the person's <u>self-concept</u> (what he thinks of himself) by circling one number on the following scale:

1	2	3	4
high	somewhat high	somewhat low	low

Specify the basis for your rating _____

_____

_____

<u>Your confidence in this rating</u>:

1	2	3	4
quite confident	fairly confident	not very confident	quite unconfident

Comments and suggestions _____

_____

_____